

AMENDMENT UNDER 37 C.F.R. §1.116
USSN: 09/842,634

REMARKS

Claims 9-17, all of the claims pending in the application, are rejected. Claims 1-8 previously were canceled. Applicant has amended claims 9 and 12-17. Applicant also has canceled claim 10 and placed claim 11 in independent form.

Claim Rejections - 35 U.S.C. §112- Paragraph 1

Claims 12, 13 and 16 stand rejected under 35 USC §112, first paragraph as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the invention. This appears to be a rejection under the written description requirement of Section 112, and is traversed.

The basis for the Examiner's rejection of claims 12 and 13 is that, in the Examiner's opinion, the Amendment filed on July 17, 2002 amended claims 12 and 13 to define the disc of the present invention over the prior art in a way that focused on features that were not specifically set out in the original disclosure and claims. The Examiner points to the added limitation defining the disc as having "both a radial part with opposed radial surfaces and boss parts." The Examiner states that "neither radial parts nor boss parts are described in the original disclosure and thus constitute new matter." The Examiner's comments refer to both the written description requirement and the prohibition against new matter.

The Examiner's position is based on a misunderstanding of both the law and the teachings of the original disclosure. First, the question of written description and new matter are wholly different concepts in U.S. Patent Law. Written description is a requirement of Section

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112 and concerns a case where the Applicant introduces new claims to an invention that was not previously identified as inventive subject matter in the original disclosure, even if it is enabled by the original disclosure. By way of example, it is the new claiming of a disclosed tire design in an application originally drawn to an entire vehicle. The principle of written description does not preclude an applicant from further defining the originally claimed subject matter by adding limitations that are supported in the original disclosure as understood by one skilled in the art.

The prohibition against new matter concerns the addition of material that was never presented in the original disclosure.

In the present case, the subject matter of claims 12 and 13 are directed to the embodiment of Fig 4, which is disclosed at pages 7, 11 and 12. The specification clearly describes a disk 53, which is molded to a cable 52 and has a flange part 56 and a boss part 54, and a cover layer 55 formed over the boss part 54. The material, thickness and design are expressly defined as similar to that of Fig. 1, which illustrates a “disk” shape for element 3 as well as bosses formed over the wire. The disk clearly is circular and extends orthogonal to the axis of the longitudinal axis of the wire, in a radial direction, as would be apparent from Fig. 6 illustrating a mold that can be used to form the disk. One of ordinary skill would easily recognize the wire as the center of the disk and the existence of a radial direction from the wire. Because the disk has a finite thickness, it necessarily has two opposed surfaces extending in a radial direction and forming radial surfaces. The portions of the boss on opposite sides of the disk are separate parts, as is clear from Figure 4B. Nothing recited in amended claims 12 and 13 involve new matter and the detail added by way of the amendment is wholly within the scope of the original claims 12 and 13, and the embodiment to which they are directed.

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If the Examiner's concern is that the terminology used in the claim does not appear in the specification, Applicant proposes to amend the text at page 13 and the illustrations of Figs. 4B and 6 to provide such terminology without adding new matter or raising new issues.

With regard to claim 16, the existence of a groove is clearly illustrated in Fig. 4 as element 57, and upon observation of the figure, illustrates a length of the groove equal to the diameter of the wire. The support for this relationship also appears in the specification at page 8, lines 19-23 where the diameter of the wire and length of the groove are both about 4.0 mm.

In sum, the support for the subject matter of claims 12, 13 and 16 clearly is in the original specification. If it is the Examiner's position that the absence in the original specification of words identical with those of the amended claims raises an issue of written description, Applicant respectfully submits that no case law and no provision of the U.S. Patent Law can support such requirement. If it is the Examiner's position that the specification must have words identical with those of the amended claims when allowed, again Applicant submits that there is no such requirement in applicable rules or law, and that in any event, the proposed amendment to the specification and drawings will satisfy this requirement.

Claim Rejections - 35 U.S.C. §112- Paragraph 2

Claims 9 and 12-17 stand rejected under 35 USC §112, second paragraph as failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. This rejection is based primarily on the lack of antecedent basis in claims 14-17 and the identification of the synthetic resin (claim 9) and the "radial part," "boss part" and "opposed radial surfaces in claims 12 and 13. This rejection is traversed.

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Applicant has amended the claims to remove the bases for the rejection. With regard to the alleged indefiniteness in claim 9 based on the term "synthetic resin," Applicant has amended the claim to recite a "first" and "second" synthetic resin, with the understanding that this designation is with respect to its location and structure, and not the materials used or sequence of production.

Claim Rejections - 35 U.S.C. §102

Claims 12 and 13 are again rejected under 35 U.S.C. §102(b) as being anticipated by the European Patent Application to Pedersen (EP-0767116-A2), or in the alternative, obvious over Pedersen. The rejection is traversed on the basis of the following arguments.

Claims 12 and 13 are directed to the embodiment of Figs. 4A and 4B and concern a disc 56 that is first formed on wire 4 with a radial part and a boss part that comprises a boss 54 together with a depression 57. After the disc is formed, a cover layer 55 is formed over the boss and fills the depression 57 forming a protrusion 58 that ensures a secure fit. The specification states at page 12, fourth paragraph, that the disc cable 51 of Fig. 4B can be produced with the cases 13, 14 of Figs. 5 and 6. As is clear in the figures, as amended, each of the cases 13 and 14 has a hollow cylindrical interior 13c, 14c that extend radially outward from a central axis C by an amount R, and end portions 13d, 14d. When radial part 53a of disc 53 is formed within the case, it has a size in a radial direction defined by the dimension R and has opposed radial surfaces 53b, 53c that are defined by the end portions 13d, 14d of the molds 13, 14, respectively.

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Pedersen

The Examiner asserts that Pedersen teaches a method of forming flights (discs) on a cable and that the discs include sockets (flange or boss parts) on the cable followed by forming coatings between flights and onto the sockets, with reference to Fig. 1. The Examiner notes that the socket has protrusions that secure good fixation of the ends of the protrusions, with reference to the text at col. 3, lines 39-42. The Examiner considers it obvious to further extend the cable coating along the socket up to the radial extending surface to provide additional protection against the possible exposure of the steel cables.

Since the rejection of these claims under 35 USC§ 112 is overcome, the claims clearly are different from the structure of Pedersen, primarily due to the requirement for the formation of a cover layer over a boss part up to the radially extending surface of the disc. The Examiner comments in the Response to Arguments on page 9 of the Office Action that the cable coating (3) goes “substantially up to” the perpendicular surface of the flight, thus admitting that the claimed invention is novel.

The Examiner’s back-up position, which is that it would be obvious to extend the coating to the perpendicular surface in order to provide more protection, ignores several countervailing factors. First, even though Pedersen was concerned with protection of the wire, he did not extend the coating to the flight surface. If such protection was desired, it was not obvious to Pedersen. Second, the nature of Pedersen’s structure mitigates against such extension. Pedersen uses an annular rim 3a to engage an end of the coating and secure it to the socket 2a. With reference to Fig. 1, the rim is located a very visible distance away from the flight surface,

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necessarily to allow assembly of the rim 3a. The placement of the rim directly next to the flight surface would make assembly difficult. If it were obvious to extend the coating to the flight, Pedersen would have saved the money for parts and extra process steps to avoid the use of the rim 3a. It also would not be obvious to extend the coating beyond the rims since this could leave hanging pieces of coating that could be snagged and result in the coating being torn off, thereby precluding achievement of Pedersen's purpose. These and other reasons would support a conclusion that the modification of Pedersen proposed by the Examiner is not obvious.

The Applicant has made an improvement over Pedersen, which has significant advantages in cost and performance. The U.S. patent law rewards innovation that is novel and not obvious, regardless of its minor or major character. The advance in the present case is not obvious without use of hindsight, and should be the basis for a conclusion of patentability for claims 12 and 13.

Claim Rejections - 35 U.S.C. § 103

Claims 10 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Pedersen (EP-0767116-A2) in view of Henfrey et al (3,992,503). This rejection is traversed.

Claims 10 and 11 concern a wire 4 having a cover layer 35 that is integrally formed with a disc 33 at predetermined lengths along the wire 4. Successive sections of the disc and cover combination are formed such that the disc has a fitting hole 34 into which the cover layer 35 of a preceding disc is disposed. Claim 10 broadly defines the invention and claim 11 provides the detail of the embodiment of Fig. 3.

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Applicant previously argued that the combination of Pedersen and Henfrey could not render the claimed invention obvious under U.S. law. Specifically, Applicant noted that Pedersen teaches away from the use of a single material in the prior art and does not even teach how the prior art made a disc cable used such single material. Nonetheless, according to the Examiner, Pedersen shows that a solution of a single integrated structure is known and allows Pedersen to be used as the primary reference in a rejection of the claims. The flaw in this argument is that there is no disclosure of how it was done in Pedersen's prior art. Indeed, whatever the process, it was unsuccessful. The failure may have involved materials, efficiency, yield, design or a combination of these factors. For example, if the disc and coating were made at one time, there may have been great difficulty in keeping the disc and coating from sliding along the internal wire during manufacture and/or operation, and the materials may have resulted in stress points that caused coating breakage or cracking, leading to cable failure. The fact that someone tried some unspecified approach to making a disc cable and was unsuccessful, only emphasizes the patentability of Applicant's successful approach. This certainly is true of the approach defined by claim 11.

Applicant also previously argued that it is improper for the Examiner to look to a combination of Pedersen and Henfrey et al. First, Pedersen teaches away from continuous processing. Second, Henfrey et al is directed to a wholly different art with different materials and process problems. Third, there is no teaching or suggestion for the combination of the two references, and the significant differences between the materials and product design and uses in the two references preclude any motivation to combine.

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The first point has already been addressed. As to the second point, the manufacture of a continuous flexible disc cable with a flexible plastic coating over a wire core in Pedersen has little or no commonality with the rigid and hollow plastic pipe in Henfrey et al. The materials, structures, end products and designs are totally different. Manufacturing techniques, problems and solutions are also totally different. The suggestion that one of ordinary skill would look to the two references to derive a continuously formed integral structure of disc and cover layer, as claimed, can only be based on the impermissible use of hindsight.

The third point requires a look at the disclosures of the two references for a teaching or suggestion leading to their combination. Henfrey et al has no concern with flexible products like disc cables and would have no reason to convert its hollow pipes into wire core structures, particularly ones with discs. Pedersen expressly teaches away from an integral production of a disc and coating, as already stated. Pedersen certainly has no interest in rigid products like those in Henfrey et al. Thus, it is not surprising that neither reference teaches how to apply its technology to the products of the other.

As to motivation, the only reason identified by the Examiner is to speed up the manufacturing process in Pedersen and to make cheaper disc cable out of a single material. However, the Examiner ignores the differences between the two processes and the significant differences in structure that mitigate against speed and lower cost. Pedersen clearly wants separate disc and coating formation, and needs a metal rim 3a to hold the coating in place. Pedersen could eliminate the rim to save steps but doesn't do so, so cost and speed are not a consideration. It would be submitted that the primary motivation is the achievement of a disc cable that has an improved flexible plastic cover over the cable, with a separate disc design.

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Moreover, the separate molding process of Pedersen leads one skilled in the art down a path that is distinctly different from that of Henfrey et al. The different materials in the two references would preclude one skilled in the art from using the continuous extrusion in Henfrey to produce Pedersen's disc cable, because the manner in which the coating could be applied and cured, raises problems not considered by the Examiner in making his suggestion.

Once again, particularly with respect to the invention of claim 11, the Examiner goes far beyond the proper combination of references. The Examiner clearly is using hindsight to combine the two references from clearly different fields. Even if the Examiner is correct, the combination must fail because there is no teaching or suggestion as to how to modify Pedersen. By contrast, Applicant teaches how to produce the integrated disc and coating, at page 7, lines 3-10, and page 9, line 28 to page 11, line 10 of the specification. None of that detail is presented in either reference in a manner that would permit one skilled in the art to produce the invention, particularly the invention of claim 11.

For all of the reasons given herein and previously presented, these claims should be considered patentable over the prior art. Applicant again submits that the Examiner has not met the standard for shifting the burden of proof onto the Applicant. The Examiner's own admissions and the deficient teachings in the two prior art references can only lead to the conclusion that the claimed invention is not obvious.

In sum, without raising new issues that require a further search, Applicant has amended claims 9 and 11-17 in order to remove the bases for indefiniteness raised by the Examiner. The Examiner already has indicated that claims 9 and 14-17 would be allowable if amended to

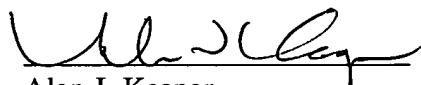
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overcome the indefiniteness. Claims 12 and 13 have been amended for the same purpose, and not to distinguish them from the prior art. Further, Applicant respectfully submits that claims 11-13 are patentable over the prior art as they are not anticipated or obvious for the reasons given above.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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PATENT TRADEMARK OFFICE

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Page 13, lines 3 and 4- Please insert the following new paragraph between lines 3 and 4.

As is clear in the Figures, each of the cases 13 and 14 have a hollow cylindrical interior 13c, 14c that extend radially outward from a central axis C by an amount R, and end portions 13d, 14d. When radial part 53a of disc 53 is formed within the mold, it has a size in a radial direction defined by the dimension R and has opposed radial surfaces 53b, 53c that are defined by the end portions 13d, 14d of the molds 13, 14, respectively.

IN THE CLAIMS:

Claim 10 has been canceled.

The claims are amended as follows:

9. (Twice Amended) A producing method for a disc cable which travels within piping connected endlessly, the cable having discs disposed thereon in a predetermined spacing relation, the method comprising:

a step of forming a cover layer formed of a first synthetic resin on the surface of a metal wire, and forming a groove-like part through which the surface of the metal wire is exposed, said groove-like part not forming a part of the cover layer and being distributed in a predetermined spacing relation in a longitudinal direction of a cable, and

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a step of molding a disc formed of a second synthetic resin, and causing said first synthetic resin to flow into the groove-like part to form a protrusion on the disc to fixedly mount it on the cable.

11. (Amended) [The producing method for a disc cable according to claim 10,] A producing method for a disc cable which travels within piping connected endlessly, the cable having discs disposed thereon in a predetermined spacing relation, the method comprising a step of forming a cover layer formed of synthetic resin on the surface of a metal wire, and forming a disc formed of synthetic resin integral with the cover layer, wherein in molding the disc, a fitting hole is formed in the disc, and one end of the cover layer is fitted in the fitting hole.

12. (Amended) A producing method for a disc cable which travels within piping connected endlessly, the cable having discs disposed thereon in a predetermined spacing relation, the method comprising:

a step of forming a disc of a first synthetic resin on the surface of a metal wire, said wire having a longitudinal dimension, to fixedly mount it on the metal wire, said disc having a radial part with opposed radial surfaces that extend orthogonal to said longitudinal dimension of said wire and boss parts, each boss part extending from a respective radial surface of said disc, and

a step of forming a cover layer formed of a second synthetic resin on the surface of the metal wire and extending to a radial surface of said disc and covering at one end thereof a boss part of the disc.

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13. (Amended) A producing method for a disc cable which travels within piping connected endlessly, the cable having a metal wire core and discs disposed thereon in a predetermined spacing relation, each of said discs comprising a radially extending part having opposed radial surfaces and a boss part extending from a respective one of said radial surfaces and having an inner layer part and a flange part, the method comprising:

 molding the inner layer part of the boss part of the disc and the flange part integrally, and forming a depression in the inner layer part of the boss part of the disc proximate a radial surface of said radially extending part, and

 forming the cover layer formed of synthetic resin on the surface of the metal wire, covering one end thereof on the inner layer part of a boss part of the disc to form an outer layer of the boss part extending to said radial surface, and forming a protrusion corresponding to the depression on one end of the cover layer.

14. (Amended) The producing method for a disc cable as recited in claim 9 wherein said groove-like part has a length of 1.0 mm to 5.0 mm.

16. (Amended) The producing method for a disc cable as recited in claim 9 wherein said groove-like part has a length approximately equal to a diameter of said wire.

17. (Amended) The producing method for a disc cable as recited in claim [9] 12 wherein said groove-like part has a length substantially smaller than a length of said disc, including said radial part and said boss parts.